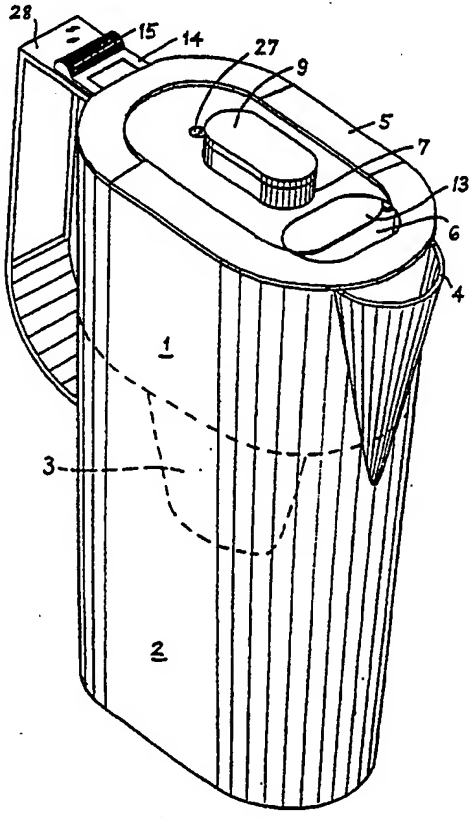


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<p>(54) Title: FILTER JUG AND A LID THEREFOR</p> <p>(57) Abstract</p> <p>A water filter jug contains a hopper (1) accommodating a removable filter (3) and has a spout (4) which communicates only with the lower part of the jug body (2), such that water entering the hopper (1) is constrained to pass through the filter (3) and into the lower part of the jug body from which it can be poured out via the spout. A lid (5) has an aperture (6), which is closed by a slidable cover (13) operated by a thumb grip (15) and through which water is poured to enter the hopper (1). A ratchet mechanism is mounted on the underside of the lid (5) to register each time the cover (13) is opened to enable water to enter the hopper (1), thereby giving an indication of the remaining useful life of the filter (3). A visible indication of the remaining useful filter life may be provided via a window (27) in the lid (5).</p> 		

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-1-

FILTER JUG AND A LID THEREFOR

This invention relates to a filter jug and a lid therefor, and more specifically to a container in the form of a filter jug for filtering liquid, particularly water, and also a lid  
5 for such a container.

A known type of filter jug comprises a jug body having a handle, a pouring spout and a lid. The jug body contains a hopper in its upper part in which a filter element is mounted, such that water poured in the hopper is constrained  
10 to pass through the filter element into the lower part of the jug body. The filtered water can then be poured out of the jug body via the spout.

As it is necessary to replace the filter element after a predetermined amount of usage, some known filter jugs have  
15 an indicator mounted on the jug lid which is manually turned every time the jug is filled until it indicates that the filter should be replaced. However, a disadvantage of this type of indicator is that the user must remember to turn the indicator each time the jug is filled.

A further disadvantage of known filter jugs is that the  
20 lid must be removed from the jug body in order to fill the hopper with water to be filtered.

It is an object of the present invention to provide a filter jug and a lid therefor which alleviates the above  
25 mentioned disadvantages of such known filter jugs.

From a first aspect, the invention consists in a container for filtering liquid, in particular water, the container being arranged to have a filter element mounted therein through which liquid which enters the container is  
30 constrained to pass, characterised in that the container includes means for automatically indicating when the useful life of the filter element has expired.

The indicating means are preferably mounted on a lid of the container and are arranged to register each time liquid  
35 can pass through the lid via an aperture provided therein. The

-2-

aperture may be closable by a cover mounted on the lid which operates the indicating means each time the cover is moved to open the aperture.

5       The indicating means may comprise a rotary member mounted on the lid which is arranged to be turned through a predetermined angle each time the cover is moved to open the aperture. The rotary member preferably has markings visible from outside the container, the markings representing the  
10       usage of the filter element.

      The cover is preferably resiliently biased towards closing the aperture and is slidably retracted to open the aperture by a user-operable member. The user-operable member may be mounted on the handle of the container, such that both  
15       the container can be held and the member operated to open the aperture simultaneously with one hand. Alternatively, the cover may be moved to open the aperture by a user-operable rotary member such as a knob mounted on the lid.

      From a second aspect, the invention consists in a lid for  
20       a container for filtering liquid, in particular water, characterised in that the lid comprises means for automatically registering each time liquid to be filtered enters the container in order to monitor the usage of a filter element mounted inside the container.

25       In a preferred example, the lid includes an aperture through which the liquid passes to enter the container, the aperture being closable by a cover and the registering means being arranged to register automatically each time the cover is opened. The cover may be movably mounted on the lid to  
30       open and close the aperture, and is also preferably resiliently biased towards the closed position.

      The registering means may comprise a ratchet mechanism mounted on the lid and arranged to be operated each time the cover is opened. The ratchet mechanism may comprise a rotary  
35       member which is turned a predetermined distance each time the cover is opened. The ratchet mechanism preferably comprises interengaging teeth provided on the rotary member and the

-3-

cover, such that the rotary member is turned each time the cover is moved to open the aperture. Markings may be provided on the rotary member to indicate the usage of the filter, with one complete revolution of the disc indicating for example that the filter element needs to be replaced. The rotary member is preferably mounted on the underside of the lid with the markings being visible through a window provided in the lid.

10 From a third aspect, the invention consists in a container for filtering liquid, in particular water, the container having a hopper mounted in its upper part, the hopper being arranged to support a filter element such that liquid poured into the hopper is constrained to pass through the filter element into the lower part of the container, and a lid closing the hopper, characterised in that means are provided to enable liquid to be poured into the hopper without the lid being removed.

20 In a preferred arrangement, the lid is provided with an aperture through which liquid can enter the hopper, the aperture being closable by a cover. The cover is preferably openable by a user-operable member mounted on a handle of the container such that both the container can be held and the member operated to open the aperture simultaneously with one hand. Alternatively, the cover may be openable by a user-operable rotary member such as a knob mounted on the lid. The container may include means for automatically indicating when the useful life of the filter element has expired, such as registering each time the cover is opened to enable liquid to pass through the lid via the aperture provided therein.

30 The invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 is a perspective view of a filtering container or filter jug according to one embodiment of the invention;

35 Figure 2 is an exploded view of the lid of the filter jug shown in Figure 1; and

-4-

Figures 3 and 4 are a plan and a perspective view respectively of certain of the lid components shown in Figure 2.

5 Referring now to the drawings, a water filter jug has a hopper 1 mounted in the upper part of its body 2, the hopper accommodating a removable filter 3. At one end of the jug body 2 is a spout 4, which communicates only with the lower part of the jug body 2, and at the opposite end of the body 2 is  
10 a handle 28.

A lid 5 fits over the jug body 2 so as to enclose the hopper 1. Towards the spout end of the lid 5 is an oval aperture 6, and the lid has at its centre a longitudinal oval housing 7, which provides a knob to remove the lid from the  
15 jug body and which contains a channel 8 and is closed by a cap 9. The lid 5 also has a peripheral skirt 10 depending from its edge and ensuring a good fit inside the rim of the hopper 1, and in the handle end of the skirt 10 is provided an opening 11.

20 A slidable plate 12 has a portion 13 which acts as a cover to close the aperture 6. An elongated portion 14 of the plate 12 extends through the skirt opening 11 and has at its end a user-operable thumb grip 15. As can be seen in Figure 1, the thumb grip 15 overlies the upper part of the handle 28  
25 of the jug.

The plate 12 has a central longitudinal slot 16 which partly extends into the elongated portion 14. A flange 17 extending into the slot 16, and a vertical lug 18 are provided adjacent the cover portion 13. A resilient member such as a  
30 spring 19 rests on the flange 17 and is located in the channel 8 with one end bearing against the lug 18 which protrudes into the channel 8. The other end of the spring 19 bears against the opposite end of the channel 8.

A rotary disc 20 is located below the plate 12, and at  
35 the centre of the disc 20 is an axle 21 which extends up through a hole (not shown) in the lid 5, inside the housing 7, and is received in a cylindrical disc holder 22 which

-5-

allows rotation of the disc 20. Around the periphery of the disc 20 are a plurality of equally spaced teeth 23 which engage with a tooth 25 on the underside of the plate 12 to  
5 form a ratchet mechanism. An opposing tooth 26, seen in Figure 4, is provided on the underside of the lid 5 and is arranged to engage with the disc teeth 23 at a position substantially opposite the tooth 25. The upper surface of the disc 20 has markings 24 in any suitable form which can be  
10 viewed through a window 27 in the lid 5.

In order to enable water to enter the hopper 1, the aperture 6 is opened by pulling the plate 12 towards the handle 28, against the bias of the spring 19, by means of the thumb grip 15. As the plate moves, the tooth 25, which  
15 engages with the disc teeth 23, rotates the disc 20 clockwise through a preset angle depending on the number of teeth 25 and causes a different marking 24 to be visible through the window 27.

When the thumb grip 15 is released the spring 19 urges  
20 the lug 18 and hence the entire plate 12 towards the spout, thereby reclosing the aperture 6 with the cover portion 13. The tooth 25 slides over the sloping face of the tooth 23 with which it is engaged and the opposing tooth 26 prevents any anti-clockwise rotation of the disc 20.

25 The rotary disc 20 thus registers each time water can enter the hopper 1 via the open aperture 6 and the visible markings 24 on the disc 20 indicate the remaining useful life of the replaceable filter. In one example, the rotation of the disc and its markings may be arranged such that one  
30 complete revolution of the disc represents the total life of each filter element. Unlike known filter jugs, the hopper can be filled via the aperture 6 without removing the lid 5, and the jug can be held by the handle and the aperture can be opened by means of the thumb grip 15 simultaneously with one  
35 hand. This enables the hopper 1 to be easily and quickly filled, for example from a running tap, via the aperture 6 with the corresponding usage of the filter being automatically

-6-

registered by the rotary disc 20.

Whilst a particular embodiment of the invention has been described, various modifications may be envisaged without departing from the scope of the invention, as defined in the appended claims. For example, instead of the thumb grip 15 which uses a linear sliding movement to move the cover portion 13 and thus open the aperture 6, the cover portion may be moved by means of a user-operable rotary member such as a knob (not shown) preferably mounted on the lid 5.

-7-

CLAIMS

1. A container for filtering liquid, the container being arranged to have a filter element (3) mounted therein through which liquid which enters the container is constrained to pass, characterised in that the container includes means (20) for automatically indicating when the useful life of the filter element (3) has expired.  
5
2. A container as claimed in claim 1, wherein the indicating means (20) are mounted on a lid (5) of the container and are arranged to register each time liquid can pass through the lid (5) via an aperture (6) provided therein.  
10
3. A container as claimed in claim 2, wherein the aperture (6) is closable by a cover (12, 13) mounted on the lid (5) which operates the indicating means (20) each time the cover (12, 13) is moved to open the aperture (6).  
15
4. A container as claimed in claim 3, wherein the indicating means (20) comprises a rotary member (20) mounted on the lid (5), the rotary member (20) being arranged to be turned through a predetermined angle each time the cover (12, 13) is moved to open the aperture (6).  
20
5. A container as claimed in claim 4, wherein the rotary member (20) has markings (24) visible from outside the container, the markings (24) representing the usage of the filter element (3).  
25
6. A container as claimed in claim 3, 4 or 5, wherein the cover (12, 13) is resiliently biased towards closing the aperture (6) and is slidably retracted to open the aperture (6) by a user-operable member (15).

-8-

7. A container as claimed in claim 6, wherein the user-operable member (15) is mounted on a handle (28) of the container, such that both the container can be held and the member (15) operated to open the aperture (6) simultaneously with one hand.

8. A container as claimed in claim 3, 4 or 5, wherein the cover (12, 13) is moved to open the aperture (6) by a user-operable rotary member such as a knob mounted on the lid.

9. A lid for a container for filtering liquid, characterised in that the lid (5) comprises means (12, 13) for automatically registering each time liquid to be filtered enters the container in order to monitor the usage of a filter element (3) mounted inside the container.

10. A lid as claimed in claim 9, including an aperture (6) through which the liquid passes to enter the container, the aperture (6) being closable by a cover (12, 13) and the registering means (12, 20) being arranged to register automatically each time the cover (12, 13) is opened.

11. A lid as claimed in claim 10, wherein the cover (12, 13) is movably mounted on the lid (5) to open and close the aperture (6) and is resiliently biased towards the closed position.

12. A lid as claimed in claim 10 or 11, wherein the registering means (12, 20) comprises a ratchet mechanism (12, 20) mounted on the lid (5) and arranged to be operated each time the cover (12, 13) is opened.

13. A lid as claimed in claim 12, wherein the ratchet mechanism (12, 20) comprises a rotary member (20) which is turned a predetermined distance each time the cover (12, 13) is opened.

-9-

14. A lid as claimed in claim 13, wherein the ratchet mechanism (12, 20) comprises interengaging teeth (23, 25) provided on the rotary member (20) and the cover (12, 13),  
5 such that the rotary member (20) is turned each time the cover (12, 13) is moved to open the aperture (6).

15. A lid as claimed in claim 13 or 14, wherein markings (24) are provided on the rotary member (20) to indicate the usage of the filter element (3).

10 16. A lid as claimed in claim 15, wherein the rotary member (20) is mounted on the underside of the lid (5) with the markings (24) being visible through a window (27) provided in the lid (5).

15 17. A container for filtering liquid, the container having a hopper (1) mounted in its upper part, the hopper being arranged to support a filter element (3) such that liquid poured into the hopper (1) is constrained to pass through the filter element (3) into the lower part (2) of the container, and a lid (5) closing the hopper (1), characterised in that  
20 means (6, 12, 13) are provided to enable liquid to be poured into the hopper without the lid (5) being removed.

18. A container as claimed in claim 17, wherein the lid (5) is provided with an aperture (6) through which liquid can enter the hopper, the aperture (6) being closable by a cover  
25 (12, 13).

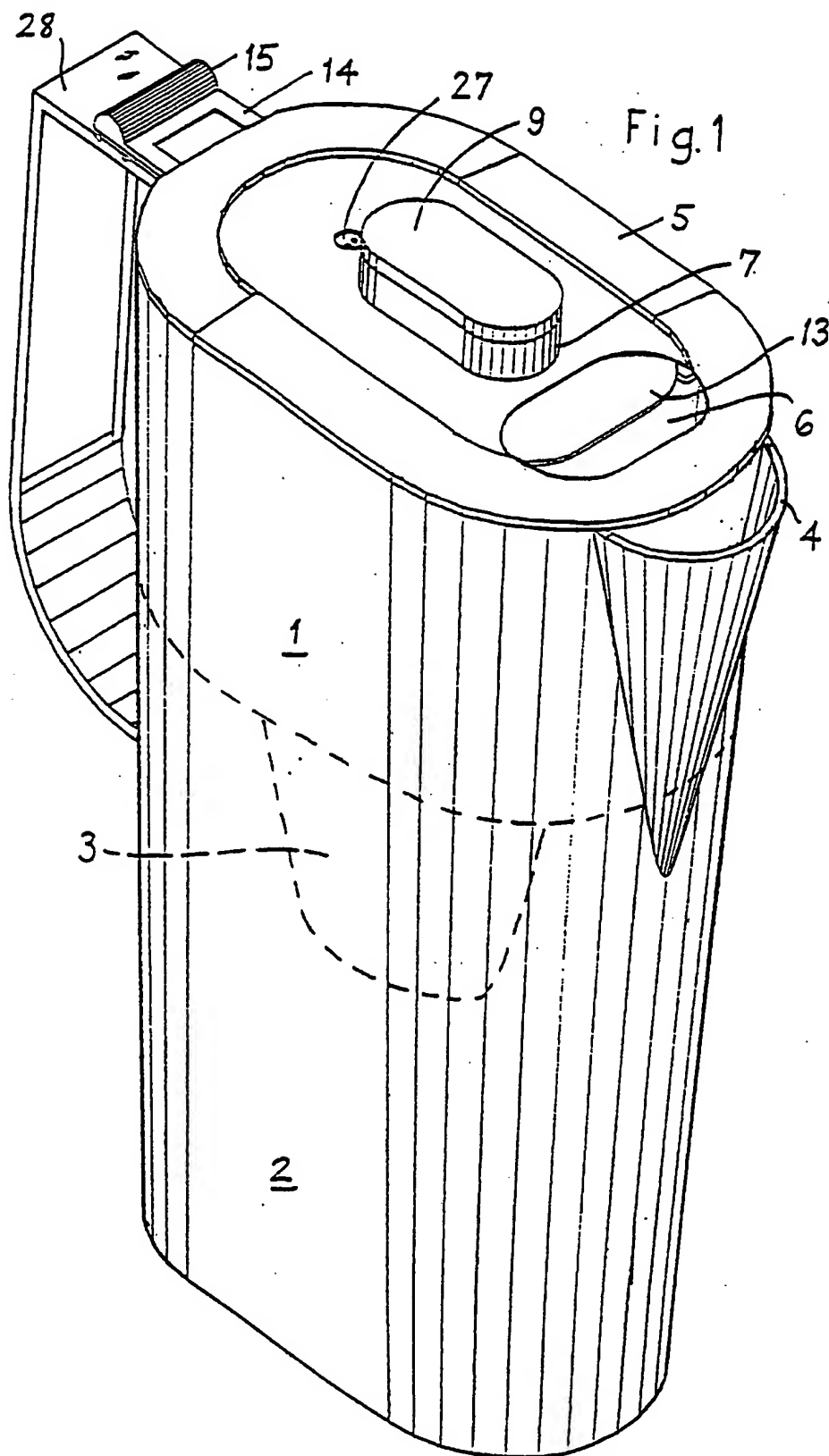
19. A container as claimed in claim 18, wherein the cover (12, 13) is openable by a user-operable member (15) mounted on a handle (28) of the container such that both the container can be held and the member (15) operated to open the aperture  
30 (6) simultaneously with one hand.

-10-

20. A container as claimed in claim 18, wherein the cover (12, 13) is openable by a user-operable rotary member such as a knob mounted on the lid (5).

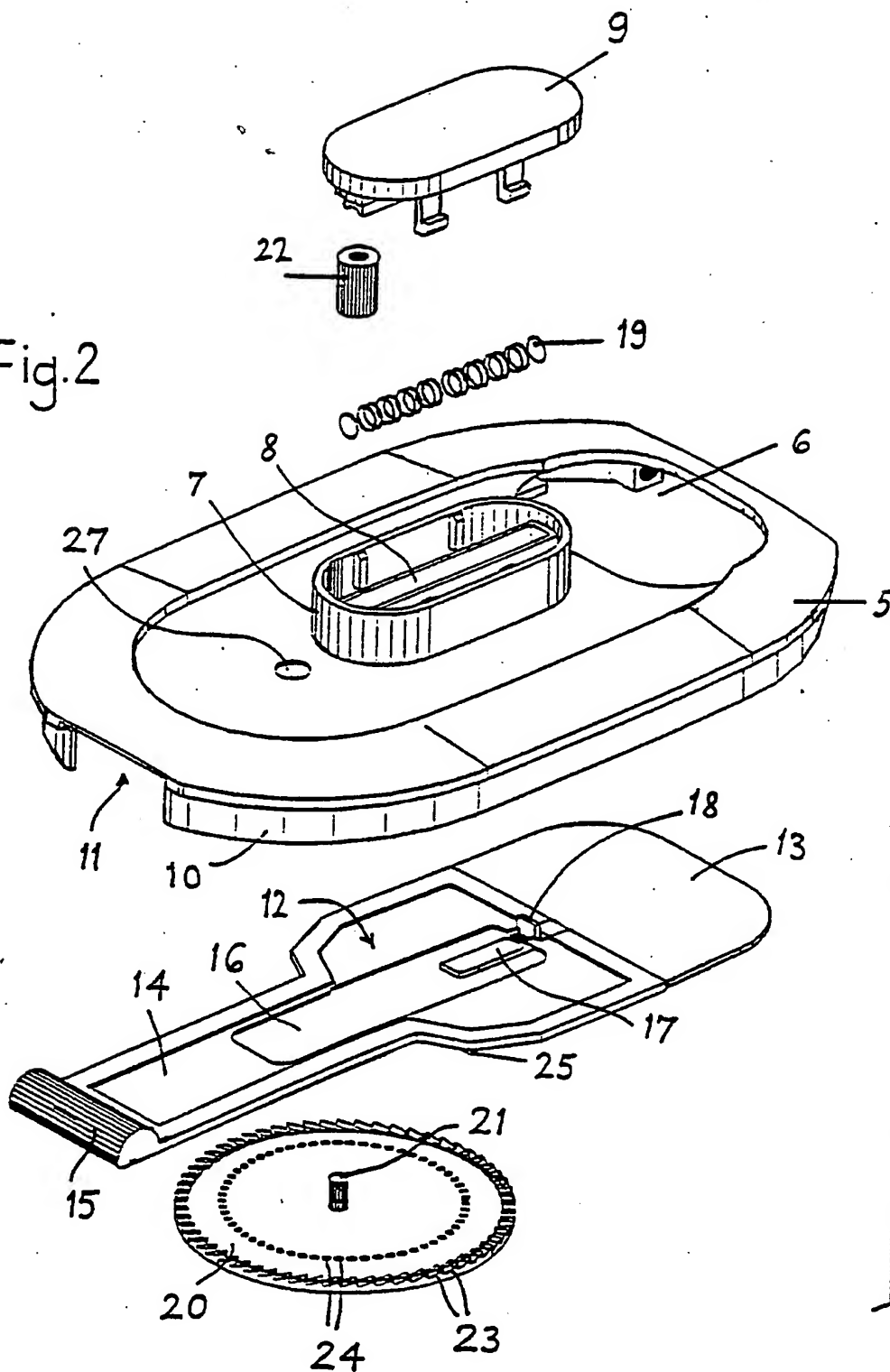
5 21. A container as claimed in claim 17, 18, 19 or 20, including means (20) for automatically indicating when the useful life of the filter element (3) has expired.

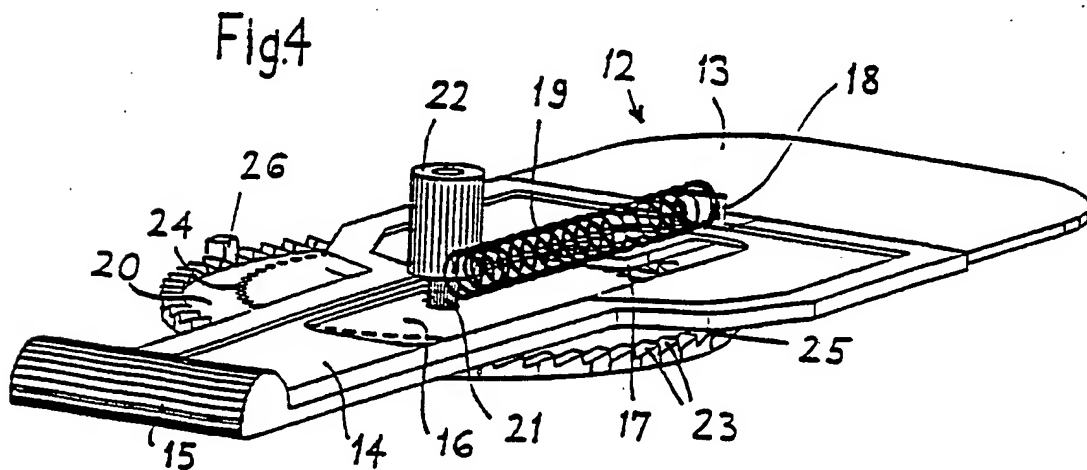
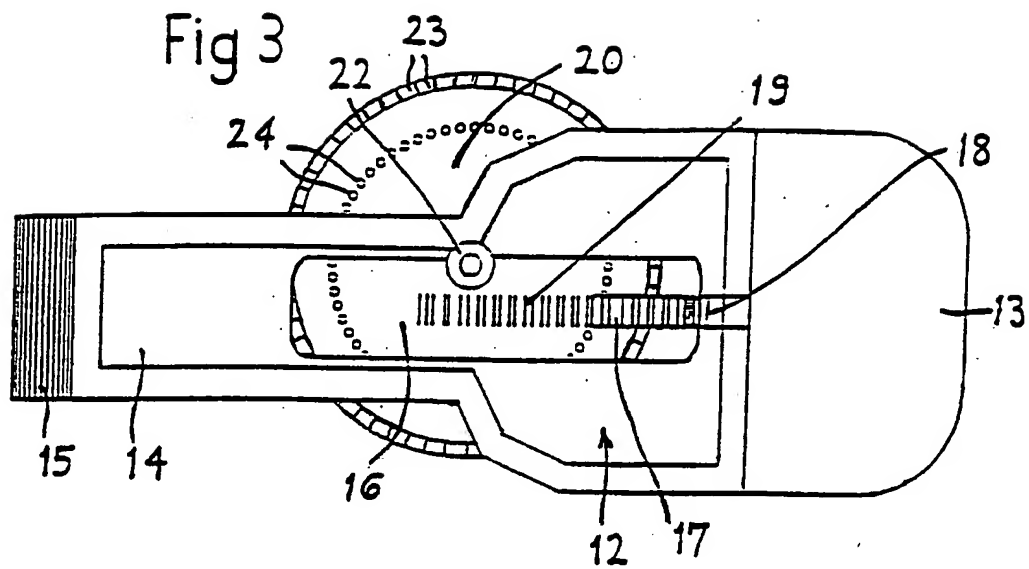
10 22. A container as claimed in claim 18, 19 or 20 including means (20) for automatically indicating when the useful life of the filter element (3) has expired, the indicating means (20) being arranged to register each time the cover (12, 13) is opened to enable liquid to pass through the lid (5) via the aperture (6) provided therein.



2/3

Fig.2





## INTERNATIONAL SEARCH REPORT

Int. Application No

PCT/GB 95/00901

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 C02F9/00 C02F1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C02F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO-A-92 08677 (KENWOOD MARKS) 29 May 1992 see claims 1-26 ---	
A	US-A-5 190 643 (J.K.DUNCAN ET AL) 2 March 1993 see claims 1-16 ---	
A	GB-A-2 269 586 (W.LEVENE) 16 February 1994 see claims 1-15 -----	

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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1 August 1995

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Information on patent family members

Int. Application No  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US-A-5190643	02-03-93	AU-B- 3434093 WO-A- 9313847	03-08-93 22-07-93
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